## Purchasing a Yak or CJ

## By Craig Payne

So you want to buy an Yak or CJ; real easy, just bring money and fly it home…maybe. Maybe you will win the Lottery too. Sometimes that happens but more often the buyer ends up with a laundry list of known squawks and for a bonus, some “gotchas” too. What does the prudent buyer do?

The Yak or CJ is a specialized aircraft with lots of differences from everyday General Aviation aircraft. There really aren’t that many folks out there with deep knowledge of the systems and troubleshooting, especially in the A&P ranks. I hope this does not come as a shock, but all A&P’s are not created equal. In my experience, “experts” in either aircraft have their strong and weak areas. There are certain tasks that I shy away from as an A&P but I’m always amazed by what many owners will jump right into without a work plan.

**Documentation:** Given this scenario, how does the prospective buyer select a good airplane for a fair price? I have performed a few pre-purchase inspections on a variety of aircraft. Over the years I have come to start my pre-purchase inspection by looking at Paperwork and Provenance, using the logbooks and what records I can find. Who were the people who have owned the airplane? Who did the importation and the certification? Who owned it since and what did they do. Often the logbooks tell me as much as what is NOT in there as what is been recorded.

Yak’s have factory issued service bulletins and change modifications but the CJ-6 only has a few documented service items; most were found by hard experience here in the U.S.

Recently I assisted in the repair of undocumented damage to a straight tail 182. The previous owner had managed to rip the fixed gear off the fuselage in a landing on a grass strip and then paste it back together using shoddy workmanship and no mention in the logs. At least he was consistent, the AD compliance was covered with the blanket statement; “all AD’s complied with”. The new owner did get some compensation on the price but later got stung when he found that the Yellow Tag for the prop did not fit the Serial Numbers and was the wrong prop for that model. No STC either, somebody had swapped tags from another propeller.

**Modifications:** I’ll use the Nanchang CJ-6 as an example because they generally have several times the total time that a Yak-52 has accumulated and they tend to have a lot more mods. “Mods” means anything from a baggage compartment floor to a re-wiring job. Seldom are these mods documented in the logs or have installation instructions, such as an STC is for certified aircraft. It is up to the inspector to ferret out *What* has been done and *How* it was done.

**Equipment:** The scope of modifications is really wide with the Nanchang. At the top of my list is the stainless steel exhaust system. An absolute must have for both safety and longevity. Fortunately for Yak buyers, the pipes are stainless. Having an oil filter and air filter installed means less engine wear from silica, “dirt” in other words. Question is; how long ago it was it installed? Decent radios and functional US instruments are another must have. Baggage compartments can be overdone and could too much weight. Simple is good for me. Look at the price of seat pack parachutes today and hope there is a decent set included in the purchase. Don’t forget a stainless air-water filter.

**Fluff:** Then there are mods that add wow factor but add little value to performance. Dress-up items; instead of chrome and polished metal, I rather see stuff like fire sleeving over the hoses. Gun sights, fake guns, rocket pods, the old Yakkity Yaks Beauty Bump, etc. All add “character” but also weight and drag.

**High End:** And then there are serious mods that could really ring up the bill if you tried to buy the pieces separately. The M-14P engine conversion also requires the exhaust system. A shutter system or modification to fit, the 2 or 3-blade prop plus a spinner really racks up the bill. Incidental costs include new hoses, engine mounts, and numerous other bits. To do this in 2014 would cost $35,000 -$45,000 and up, and that is with a mid-time engine and 2-bladed prop.

In today’s depressed market, the high end upgrades can be had on the cheap if already on the aircraft. No more than $10k to $35K separates the “Big Engine” from the straight 285. Looks like real deal to me. Yak-52’s remain a great buy. Low time airframes with mid-time engines are solid value to the folks who want a strong aerobatic trainer and a warbird on the cheap.

**Closer Examination:** Compare what has been done in the logs with what you see on the airplane. Sometimes it seems if the logs are for another aircraft. General Condition log entries may only have the required Program Letter statement but the preceding logbook entry should have a detailed description of the work performed, and the method by which it was done. Such as: “in accordance with 100 hour inspection work to be performed as listed in the CJ-6A maintenance manual”. Often abbreviated as “IAW manufacturer’s maintenance instructions for the 100 hour inspection”.

Well maybe, then again any repair shop will include a copy of the Work Order that the work performed was recorded on. I specifically look for items scheduled for 500 hour and/or 5 year recurrence. When were the air tanks pulled out, checked and cleaned? Was the oil cooler ever removed and overhauled? How many hours and years on the hoses? Check valves? Retract cylinders? The list is long and after a succession of owners, documentation may be sparse.

Again, it is up to the inspecting mechanic to find out what has been done and might need attention. This is where that deep knowledge earns that fee. Just because that warbird has cool paint and a chrome engine dress kit does not mean it is worth buying. However, the world being what it is, Glitter often wins over dull Truth.

At this point I will confess that I installed several mods over the years that I later yanked out. The accelerator jet plug mod was popular for a while, until I discovered that doing so reduced full power available. Mods of my own design also failed to make the grade and I removed them.

Selection of a mechanic is problematic. Reputations are usually built by hard work and experience and then sometimes are squandered by the push for the dollars or the need to maintain a larger operation. The value of networking with the Red Star community cannot be understated. Attending events, flying with different folks helps build relationships that can pay off in dollars saved and headaches avoided when you need to find somebody reliable.

While there is no substitute for education on the aircraft and systems, the prospective owner needs to keep an open mind as well as open eyes. When operating my engine, I use book settings for RPM and Manifold pressure. This allows me to expect a certain level of performance at a given setting and helps evaluate the health of the engine, trim of the airframe and other parameters as well. Thus I set a frame of reference and when doing a pre-purchase inspection, the frame of reference is book performance and book condition for a “straight CJ”. Evaluation of the Yak is a lot more straight-forward due to fewer changes

**Caveat**: Be wary of the guy who installed $1000 worth of chrome but chiseled on a $100 hose. **One Tip:** figure the cost of “catch up” maintenance, both at purchase and two years out and add it to the purchase price to evaluate different purchases.

# Avionics:

Avionics are a little like beauty; the eye of beholder decides what is best. Today’s technology moves so fast that many cockpits are outdated quickly. The newest trend is using low-cost tablets wirelessly connected to handheld “gee-whiz” devices that offer substantial capability and can be reconfigured as technology changes. I would hesitate, either as a seller or buyer to invest too much in new panels.

Moreover, it is the *capability* that is important. Does the aircraft have servos installed that can be interfaced to different auto pilots? How about a flexible avionics bus? Are Avionics Power supplies installed? The buyer must decide how the aircraft will be used and whether the investment is worth it.

# Valuation:

Current market values vary, so how does the buyer compare different aircraft values? I have compiled a few lists.

The **Must-Have** list covers piece of mind and safety of flight items. A buyer must install these items if they are lacking. ***Subtract*** the cost of these missing items from average market price to compensate what a buyer would have to spend to bring the airplane up to standard. The purchases might be spread over a year or two. In the case of a tired engine, remember that the Devil will have his due one day.

The **Should-Have** list includes those items that the buyer needs to gain any real utility over the next few years. ***Add*** the costs to the expected purchase price to arrive at a reasonable estimate of the airplane will cost over the next few years.

The **Wish-I-Had** list includes major upgrades and retrofits that generally cost more to buy and install that if included in the initial purchase. For the Nanchang, many modifications are available; some are even useful .

# Must-Haves: Subtract from asking price *if not installed* to compare value with similar prospects.

**Item Description Cost estimate**

Deficiency items discovered during mechanical inspection. $ ???? as required

General Condition inspection if out of annual or close $1,200 average

Top Overhaul for engines over 800hrs SMOH $9,000 - $11,000

Horizontal stabilator spar reinforcement (CJ6) $ 350 - $600 parts & labor

FOD barrier (Yak-52) $ 150 - $250

Single working radio in good condition $1,200

Mode C transponder in good condition $1,000

Stainless steel air-water separator (Yak and CJ) $ 300

# Should-Have’s: Add *if not installed* to calculate required future costs

**Replacement Item Value**

Stainless Exhaust (standard on Yaks) $1,800

2 seat pack parachutes with recent pack dates $3,500

And good canopies

Oil cooler OH cost with new hoses and shipping (CJ6) $ 750

Bracket air filter for CJ-6 & Oil filter installation $ 300 - $500

Replace loose, peeling or chipped paint $8,000 - $12,000

# Wish-I-Had: Add *if not installed* to calculate acquisition cost

“Big” engine conversion for a CJ-6 $35,000 - $45,000

400HP conversion for the Yak (less if exchanged) $30,000 - $35,000

Extra Capacity fuel bladders Yak or CJ $6,000

2-blade after-market propeller blades $6,000

3-Blade after-market propeller $12,000 - $16,000

Big Propeller spinner $1,200 – 1,800

Electronic ignition system to replace mags $7,800

Electronic ignition magneto conversion $1,000 - $2,000

Throttle body fuel injection conversion $5,000

Malcom Hood in front – parts and labor $ 400